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10/540,530	01/23/2006	Flavio Buscaglia	05788.0374	3544

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EXAMINER	
AMINZAY, SHAIMA Q	

ART UNIT	PAPER NUMBER
2618	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/540,530	BUSCAGLIA ET AL.	
	Examiner	**Art Unit**	
	SHAIMA Q. AMINZAY	2618	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE _3_ MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on _30 January 2006_.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) _25-48_ is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) _25-33 and 35-48_ is/are rejected.

7)☒ Claim(s) _34_ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on _23 January 2006_ is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____.

DETAILED ACTION

This is the first office action in response to application No. 10/540,530 filed January 23, 2005. As originally filed, Claims 25 through 48 are presented for examination, and claims 1-24 are cancelled.

Note: *In this office action the punctuation ":" is used as separation between selected paragraph or column and lines according to the reference (e.g. 2:1-5, meaning paragraph 2 or column 2 accordingly, and lines 1-5).*

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) Patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

1. Claims 25-27, 29-30, 32, and 35-48 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lin (Lin et al., European patent application No. EP000714218) in view of Johnson (Johnson, U. S. Publication No. 2004/0176,058).

Regarding claim 25, Lin discloses a station for processing a first signal which can be

generated by a mobile terminal and belongs to a plurality of signals for mobile radio communications networks *(e.g., Fig. 1-3, 1:39-49, 2:41-46, the uplink radio signal is being receive at the station for processing)*, the uplink transmission form , comprising:

an input able to receive from an antenna the first signal associated with a first band and at least one adjacent signal of said plurality associated with a second band adjacent to that of the first signal *(e.g., Fig. 1-3, 2:23-59, 3:1-6, after receiving the RF signal (first signal) via antenna (1), the RF signal is being down-converted via down-converter (7) that is being mixed with local "oscillator" LO signal (input to down-converter), the RF signal is an high-frequency-band signal (first band), it is being mixed with down-converter LO signal (adjacent signal) that is associated with the low-band-frequency (second band))*;

a processing stage for generating from the first signal and from the at least one adjacent signal a first digital signal at a first sampling frequency *(e.g., Fig. 1-3, 2:23-59, 3:1-6, 36-42, the RF signal (first signal) is being processed with the adjacent signal (LO signal) in down-converter (7), then is converted to digital signal at fast frequency (sampling frequency))*, this first digital signal including a useful spectral content of the first signal and an interfering spectral content associated with said adjacent signal *(e.g., Fig. 1-3, 2:23-59, 3:1-6, the digital signal (first) is result of mixing RF (first) signal with LO (adjacent) signal generates frequencies that are sum of the RF signal frequency and LO signal frequency and difference between the signals includes fading)*;

a *[digital]* filter for processing the first digital signal, attenuating the interfering spectral content, and for providing a filtered digital signal including at least part of said useful

spectral content *(e.g., Fig. 1-3, 2:23-59, 3:1-6, the output of analog-to-digital converter is being filtered for further process)*; and

a converter for generating from said filtered digital signal electromagnetic radiation to be transmitted on a waveguide *(e.g., Fig. 1-3, 1:39-49, 2:23-59, the Digital-to-Analog converter (9) receives the filtered digital signal via optical fiber (waveguide) on radiate wave with zero dispersion wavelength (ideally no distortion) is being transmitted).*

Although, Lin does not specifically teach digital filter, Lin suggests the signal output of analog-to-digital converter is being filtered for further process *(e.g., Fig. 1-3, 2:23-59, 3:1-6).*

In a related art dealing with radio receiver *(e.g., Fig. 7C, 2:1-3, 25:1-3)*, Johnson teaches the radio receiver digital filter *(e.g., Fig. 7C, 25:1-3, 84:1-4, the digital signal is being processed through radio receiver digital filter (754)).*

Therefore, it would have been obvious to one of ordinary skill in the art at the time invention was made to include Johnson's radio receiver digital filter that is connected to the output of the A/D converter with Lin's radio receiver output of the A/D converter to provide a radio receiver with digital filter that improves the radio receiver performance and significantly reduces interference (Johnson*, e.g., 2:-3, 10:1-3, 11:6-8).*

Regarding claim 35, Lin discloses a method for processing a first signal which can be generated by a mobile terminal and belongs to a plurality of signals for mobile radio communications networks *(e.g., Fig. 1-3, 1:39-49, 2:41-46, the uplink radio signal is being receive at the station for processing)*comprising the steps of:

receiving the first signal and second signals of said plurality including at least one signal adjacent to the first signal and interfering with the latter *(e.g., Fig. 1, 2:23-40, 4:43-44, 56-59, the multiple RF signals are received via antenna)*;

performing analog filtering of a first electrical signal corresponding to said first signal and to said second signals in order to eliminate the signals of said plurality which are non-adjacent to the first signal and transmit a second electrical signal having a useful spectral content associated with the first signal and an interfering spectral content associated with the adjacent signal *(e.g., Fig. 1, 2:23-59, 3:1-6, the received RF analog signal is being filtered by the low-noise-amplifier (4), and after going through the down-converting the digital signal (first) is result of mixing RF (first) signal with LO (adjacent) signal (second signal) generates frequencies that are sum of the RF signal frequency and LO signal frequency and difference between the signals includes fading)*;

converting from analog to digital the filtered first electrical signal so as to generate a digital signal, said conversion occurring at a first sampling frequency and defining a first transmission rate of said first digital signal *(e.g., Fig. 1-3, 2:23-59, 3:1-6, 36-42, the RF signal (first signal) is being processed with the adjacent signal (LO signal) in down-converter (7), then is converted to digital signal at fast frequency (sampling frequency), after filtering the A/D converter produces the digital signal)*;

performing *[digital]* filtering of the first digital signal in order to eliminate substantially the interfering spectral content and provide a first filtered digital signal including said useful spectral content *(e.g., Fig. 1-3, 2:23-59, 3:1-6, the output of analog-to-digital converter is being filtered for further process)*; and

reducing the sampling frequency of said first filtered digital signal so as to obtain a second filtered digital signal to be sent on a first output bus and having a second transmission rate less than the first transmission rate *(e.g., 2:23-59, 3:1-6, 36-48, the digital signal going through low-pass filter (80) and results signal going through A/D converter producing lower frequency signal) converted to digital signal at fast frequency (sampling frequency), after filtering the A/D converter produces the digital signal).*

Although, Lin does not specifically teach digital filter, Lin suggests the signal output of analog-to-digital converter is being filtered for further process *(e.g., Fig. 1-3, 2:23-59, 3:1-6).*

In a related art dealing with radio receiver *(e.g., Fig. 7C, 2:1-3, 25:1-3)*, Johnson teaches the radio receiver digital filter *(e.g., Fig. 7C, 25:1-3, 84:1-4, the digital signal is being processed through radio receiver digital filter (754)).*

Therefore, it would have been obvious to one of ordinary skill in the art at the time invention was made to include Johnson's radio receiver digital filter that is connected to the output of the A/D converter with Lin's radio receiver output of the A/D converter to provide a radio receiver with digital filter that improves the radio receiver performance and significantly reduces interference (Johnson*, e.g., 2:-3, 10:1-3, 11:6-8).*

Regarding claim 39, Lin discloses a mobile radio communications network *(e.g., Fig. 1-3, 1:39-49)* comprising:

a main control center of the network for managing a plurality of signals *(e.g., Fig. 1-3,*

1:28-38, the central station (control center) manages multiple signals);

a station for processing said signals controlled by said main control center, the processing station being provided with a port for receiving/transmitting electromagnetic radiation *(e.g., 1:28-38, the station (Fig. 1-3) the provided signals are being processed for receive (low-pass filter (4) through optical transmitter (12)) and transmit signals (optical receiver (11) through high-pass filter (3))*;

a waveguide having a first end connected to said output port *(e.g., Fig. 3, the fiber optic (waveguide) connection (first end) to the optical transmitter (12) (output port))*; and

at least one antenna station for processing a first signal which can be generated by a mobile terminal and belongs to the plurality of signals *(e.g., Fig. 1-3, 2:23-32, the antenna (1) receives the RF signals)*, said station being connected to a second end of the waveguide *(e.g., Fig. 3, the optical receiver (11) is connected to the other (second) end of fiber optic (waveguide))* and comprising:

an input able to receive from an antenna the first signal associated with a first band and at least one adjacent signal of said plurality associated with a second band adjacent to that of the first signal *(e.g., Fig. 1-3, 2:23-59, 3:1-6, after receiving the RF signal (first signal) via antenna (1), the RF signal is being down-converted via down-converter (7) that is being mixed with local "oscillator" LO signal (input to down-converter), the RF signal is an high-frequency-band signal (first band), it is being mixed with down-converter LO signal (adjacent signal) that is associated with the low-band-frequency (second band))*;

a processing state for generating from the first signal and from at least one adjacent

signal a first digital signal at a first sampling frequency *(e.g., Fig. 1-3, 2:23-59, 3:1-6, 36-42, the RF signal (first signal) is being processed with the adjacent signal (LO signal) in down-converter (7), then is converted to digital signal at fast frequency (sampling frequency))*, this first digital signal including a useful spectral content of the first signal and an interfering spectral content associated with said adjacent signal *(e.g., Fig. 1-3, 2:23-59, 3:1-6, the digital signal (first) is result of mixing RF (first) signal with LO (adjacent) signal generates frequencies that are sum of the RF signal frequency and LO signal frequency and difference between the signals includes fading)*;

a *[digital]* filter for processing the first digital signal, attenuating the interfering spectral content, and for providing a filtered digital signal including at least part of said useful spectral content *(e.g., Fig. 1-3, 2:23-59, 3:1-6, the output of analog-to-digital converter is being filtered for further process)*; and

a converter for generating from said filtered digital signal electromagnetic radiation to be transmitted to the processing station by means of the waveguide *(e.g., Fig. 1-3, 1:39-49, 2:23-59, the Digital-to-Analog converter (9) receives the filtered digital signal via optical fiber (waveguide) on radiate wave with zero dispersion wavelength (ideally no distortion) is being transmitted).*

Although, Lin does not specifically teach digital filter, Lin suggests the signal output of analog-to-digital converter is being filtered for further process *(e.g., Fig. 1-3, 2:23-59, 3:1-6).*

In a related art dealing with radio receiver *(e.g., Fig. 7C, 2:1-3, 25:1-3)*, Johnson teaches the radio receiver digital filter *(e.g., Fig. 7C, 25:1-3, 84:1-4, the digital signal is*

being processed through radio receiver digital filter (754)).

Therefore, it would have been obvious to one of ordinary skill in the art at the time invention was made to include Johnson's radio receiver digital filter that is connected to the output of the A/D converter with Lin's radio receiver output of the A/D converter to provide a radio receiver with digital filter that improves the radio receiver performance and significantly reduces interference (Johnson*, e.g., 2:-3, 10:1-3, 11:6-8)*.

Regarding claims 26 and 40, Lin in view of Johnson teach all the limitations of claims 25, 39, and further, Lin teaches a sampling frequency reducer connected to said digital filter for generating a second digital signal having a second sampling frequency lower than said first frequency *(e.g., Fig. 1-3, 3:45-48)*.

Regarding claim 27, Lin in view of Johnson teach all the limitations of claim 25, and further, Lin teaches a wherein the processing stage comprises an analog filter having a passband such as to eliminate second signals of said plurality which are non-adjacent to the first signal and transmit a first electrical signal having said useful spectral content and said interfering spectral content *(e.g., Fig. 1-3, 2:23-59, 3:1-6, 4:43-44, 56-59)*

Regarding claim 29, Lin in view of Johnson and in view of teach all the limitations of claim 27, and further, Lin teaches a demodulator connected to said analog filter for demodulating the first electrical signal and generating at least one demodulated electrical signal associated with a third band *(e.g., Fig. 1-4, 3:21-31, 5:12-14)* and including at least

portions of the useful spectral content of the first signal and the interfering spectral content of the adjacent signal *(e.g., Fig. 1-4, 2:23-59, 3:1-6, 21-31)*.

Regarding claim 30, Lin in view of Johnson and in view of teach all the limitations of claim 27, and further, Lin teaches wherein said processing stage also comprises an analog-digital converter *(e.g. Fig. 1-3, A/D converter 10)* for converting an additional electrical signal correlated to the first electrical signal into said first digital signal *(e.g., Fig. 1-4, 2:23-59)*.

Regarding claim 32, Lin in view of Johnson and in view of teach all the limitations of claim 29, and further, Lin teaches wherein said first sampling frequency is greater than or equal to double said third band of the demodulated electrical signal *(e.g., Fig. 1-3, 3:45-48)*.

Regarding claim 36, Lin in view of Johnson and in view of teach all the limitations of claim 35, and further, Lin teaches converting an electrical signal correlated to said first filtered digital signal into electromagnetic radiation; and transmitting said electromagnetic radiation on a waveguide *(e.g., Fig. 1-3, 1:39-49, 2:23-59, the Digital-to-Analog converter (9) receives the filtered digital signal via optical fiber (waveguide) on radiate wave with zero dispersion wavelength (ideally no distortion) is being transmitted)*.

Regarding claim 37, Lin in view of Johnson and in view of teach all the limitations of claim 35, and further, Lin teaches multiplexing on a second output bus the second filtered digital signal with additional digital signals associated with additional signals of said plurality which can be generated by additional mobile terminals *(e.g., Fig. 1-3, 3:36-42, combiner (13) (multiplexer) on the transmitter link (second bus) of the A/D converter (second filter))*

Regarding claim 38, Lin in view of Johnson and in view of teach all the limitations of claim 36, and further, Lin teaches before said electrical to optical conversion step, performing a conversion, from parallel to serial, of the second filtered digital signal; and processing the second serialized digital signal so as to generate a corresponding electrical signal in accordance with a transmission protocol relating to said optical waveguide *(e.g., Fig. 1-3, 1:39-49, 2:23-59, before processing the optical transmission (12), the parallel (before combining (14), Fig. 4, e.g. modulation) process to serial is performed and results is an input to A/D down-converter (10) and the process continued as in Fig. 3 for optical (waveguide) transmission/reception).*

Regarding claim 41, Lin in view of Johnson and in view of teach all the limitations of claim 39, and further, Johnson teaches wherein said processing station includes processing apparatus for coding/decoding voice or data signals to be sent/received to/from said at least one antenna station *(e.g., 41:1-11, 77:6-10).*

Regarding claim 42, Lin in view of Johnson and in view of teach all the limitations of claim 41, and further, Lin teaches wherein said processing station also includes a block for processing signals supplied from said apparatus so as to make them compliant with the modes of transportation on said waveguide *(e.g., Fig. 1-3, 1:39-49, 2:23-59).*

Regarding claim 43, Lin in view of Johnson and in view of teach all the limitations of claim 39, and further, Lin teaches wherein additional antenna stations provided with respective antennas are connected to said waveguide *(e.g., Fig. 1-3, 2:23-32).*

Regarding claim 44, Lin in view of Johnson and in view of teach all the limitations of claim 39, and further, Lin teaches which operates by using a system of the Universal Mobile Telecommunication System type *(e.g., 1:22-59, 2:23-59).*

Regarding claim 45, Lin in view of Johnson and in view of teach all the limitations of claim 39, and further, Lin teaches wherein said waveguide is an optical fiber *(e.g., Fig. 1-3, 1:39-49, 2:23-59).*

Regarding claim 45, Lin in view of Johnson and in view of teach all the limitations of claim 39, and further, Lin teaches wherein said waveguide forms a point-to-point link *(e.g., 1:39-49).*

Regarding claim 46, Lin in view of Johnson and in view of teach all the limitations of

claim 43, and further, Lin teaches wherein said waveguide forms a ring connection between said antenna stations *(e.g., Fig. 1-3, 2:23-32).*

Regarding claim 47, Lin in view of Johnson and in view of teach all the limitations of claim 43, and further, Lin teaches wherein a Synchronous Digital Hierarchy standard is used for transportation on said waveguide *(e.g., Fig. 1-3, 1:39-49, 2:23-59).*

2. Claims 28 and 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lin (Lin et al., European patent application No. EP000714218) in view of Johnson (Johnson, U. S. Publication No. 2004/0176,058) and in view of Berkhout (Berkhout et al., U. S. Patent No. 4,736,163).

Regarding claim 28, Lin in view of Johnson teach all the limitations of claim 27, and further, Lin teaches the analog filter (e.g., low-pass-filter (8)). However, Lin in view of Johnson does not teach a Chebyshey filter of 3.sup.rd to 7.sup.th order. In related art dealing with radio transceiver *(e.g., 5:57-40)*, Berkhout discloses a Chebyshey filter of 3.sup.rd to 7.sup.th order *(e.g., 5:57-40, 7:41-48),* therefore, it would have been obvious to one of ordinary skill in the art at the time invention was made to use the analog Chebyshey filter of Berkhout in the radio system of Lin in view of Johnson as an alternative means for achieving the predictable result of detecting interferences and making a clearer distinction between interferences and desired signal to prevent the

process from not detecting interferences in radio communication system *(*Berkhout*, e.g., 1:51-57)*.

Regarding claim 31, Lin in view of Johnson and in view of Berkhout teach all the limitations of claim 28, and further, Lin teaches wherein said first sampling frequency is greater than or equal to double said passband of the analog filter *(e.g., Fig. 1-3, 2:23-59, 3:1-6, 4:43-44, 56-59).*

3. Claims 33 is rejected under 35 U.S.C. 103(a) as being unpatentable over Lin (Lin et al., European patent application No. EP000714218) in view of Johnson (Johnson, U. S. Publication No. 2004/0176,058) and in view of Ferguson (Ferguson et al., U. S. Publication No. 2005/0210,092).

Regarding claim 33, Lin in view of Johnson teach all the limitations of claim 25, and further, Johnson teaches wherein said digital filter *[is an FIR filter]* with a number of taps such as to allow attenuation of the interfering spectral content *(e.g., Fig. 7C, 25:1-3, 84:1-4)*. However, Lin in view of Johnson does not teach a digital filter that is an FIR filter. In related art dealing with radio communication filters *(e.g., 2:1-19)*, Ferguson discloses a an FIR filter *(e.g., 2:1-19, the digital filter is finite impulse response (FIR) filter),* therefore, it would have been obvious to one of ordinary skill in the art at the time invention was made to use the FIR filter of Ferguson in the radio system of Lin in view of Johnson as an alternative means for achieving the predictable result of "greater

computational efficiency--faster/less expensive--than existing" filters in radio communication system (Ferguson, *e.g., 2:17-19)*.

Allowable Subject Matter

4. Claim 34 is objected.

Claim 34 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim.

The prior art specifically Lin in view of Johnson failed to render obviousness and failed to anticipate the following limitations:

"A station for processing a first signal which can be generated by a mobile terminal and belongs to a plurality of signals for mobile radio communications networks, comprising: an input able to receive from an antenna the first signal associated with a first band and at least one adjacent signal of said plurality associated with a second band adjacent to that of the first signal; a processing stage for generating from the first signal and from the at least one adjacent signal a first digital signal at a first sampling frequency, this first digital signal including a useful spectral content of the first signal and an interfering spectral content associated with said adjacent signal; a digital filter for processing the

first digital signal, attenuating the interfering spectral content, and for providing a filtered digital signal including at least part of said useful spectral content; and a converter for generating from said filtered digital signal electromagnetic radiation to be transmitted on a waveguide", "further comprising a sampling frequency reducer connected to said digital filter for generating a second digital signal having a second sampling frequency lower than said first frequency", and "wherein the sampling frequency reducer comprises: an anti-aliasing digital filter for filtering said filtered digital signal and having a cut-off frequency substantially equal to half of said second sampling frequency; and a decimator for sampling a digital signal output from the anti-aliasing digital filter at said second sampling frequency" as disclosed independent claim 1 , dependent claim 26, and dependent claim 34.

Conclusion

The prior art made of record considered pertinent to applicant's disclosure, see PTO-892 form.

Inquiry

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Shaima Q. Aminzay whose telephone number is 571-272-7874. The examiner can normally be reached on 7:00 AM -4:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mathew D. Anderson can be reached on 571-272-4177. The fax number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/SHAIMA Q. AMINZAY/
Examiner, Art Unit 2618

11/24/2008

/Matthew D. Anderson/
Supervisory Patent Examiner, Art Unit 2618